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BEHAVIOR OF THE IONOSPHERIC F-REGION DURING GEOMAGNETIC STORMS.--ETC(U)

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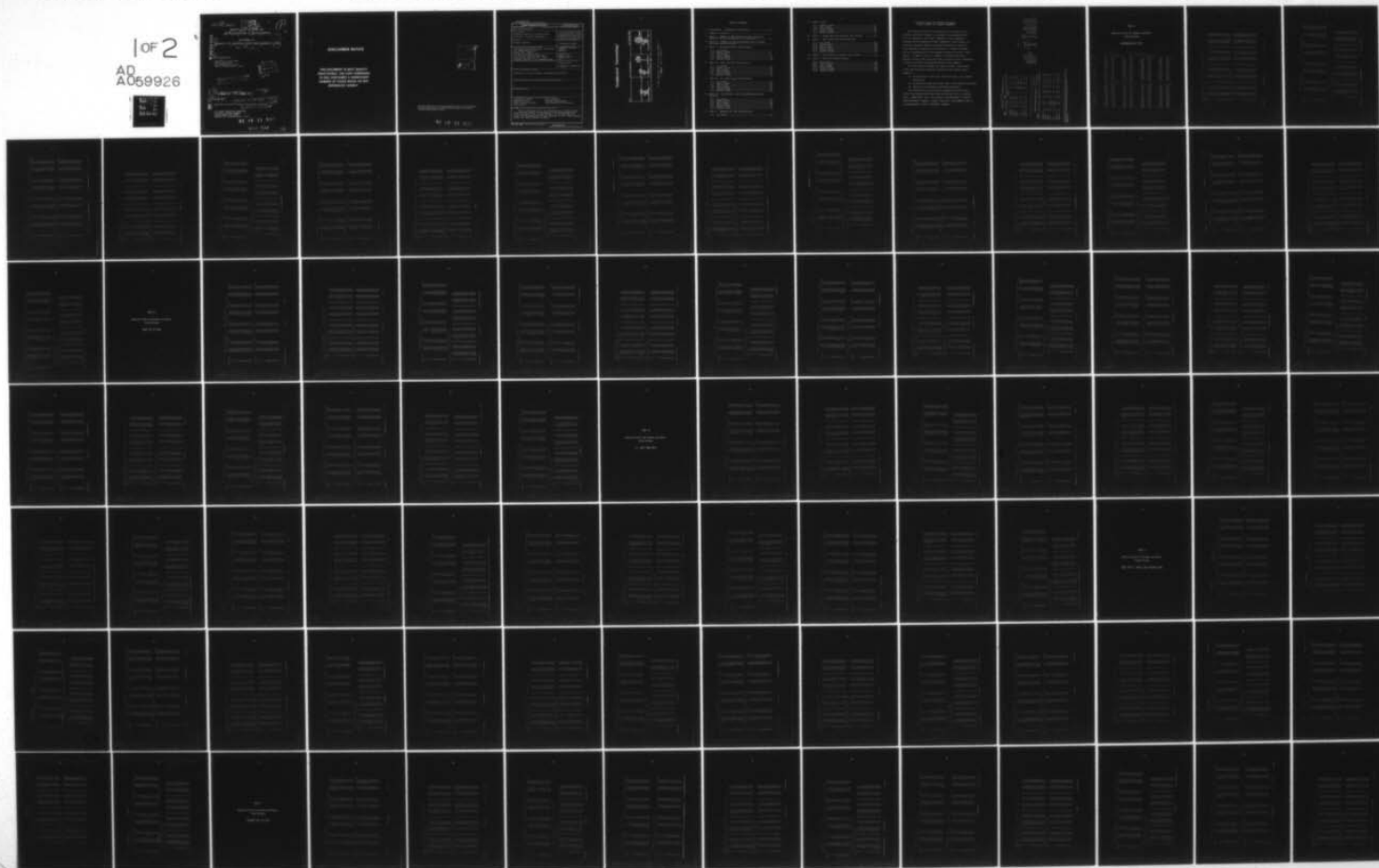
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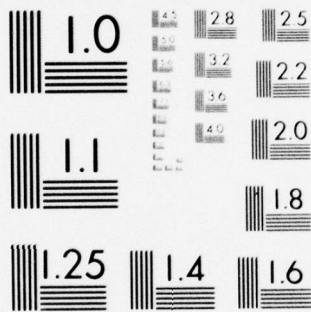
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AFGL-TR-78-0092(III)

LEVEL III

TABULATED VALUES FOR AVERAGE AND
MEDIAN STORM PATTERNS IN F-REGION PARAMETERS.

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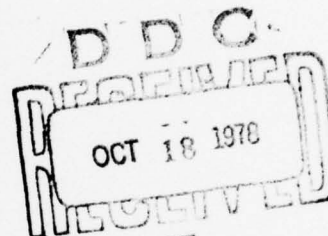
AN APPENDIX TO:

BEHAVIOR OF THE IONOSPHERIC F-REGION DURING GEOMAGNETIC STORMS.

Appendix.

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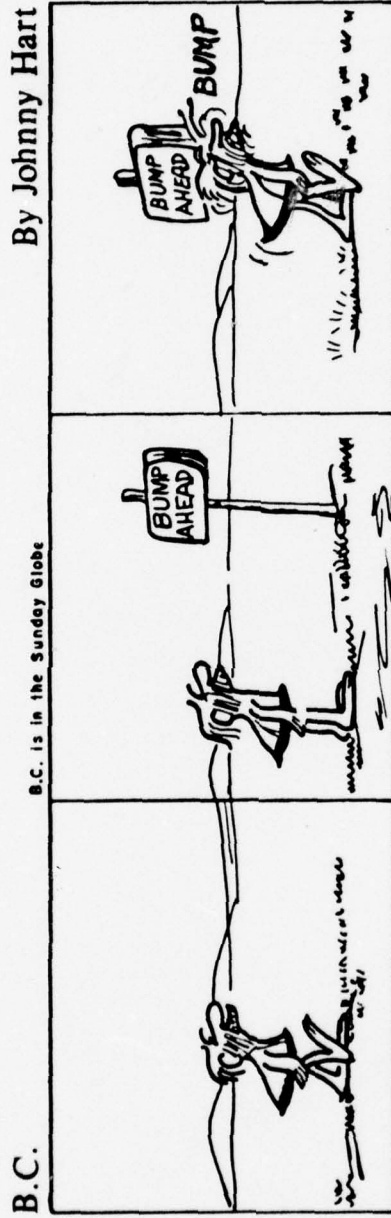
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Geophysical Forecasting!



"O dear Ophelia, I am ill at these numbers."

--- HAMLET, Act II, Scene ii.

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TABULATED VALUES FOR AVERAGE AND MEDIAN
STORM PATTERNS IN F-REGION PARAMETER

This report consists of an extensive set of Tables giving a detailed statistical summary of ionospheric storm morphologies. It is an appendix to the report "Behavior of the Ionospheric F-Region During Geomagnetic Storms", (Mendillo, 1978) volume 2 of the Final Scientific Report from Boston University to the Air Force Geophysics Laboratory for Contract No. F-19628-75-C-0044. The full documentation of the analysis procedure is given in that report. In Tables I and II, a summary is given of the Total Electron Content (TEC) observing sites, satellites used, ionospheric locations monitored and parameter/storm periods covered.

For each station examined, the tables include a description of the following storm patterns (variations upon monthly median behavior):

- (1) Average Daily (local time) Variations (SD), with standard deviations
- (2) Average Storm-Time Variations (Dst), with standard deviations
- (3) Median Daily and Median Storm-Time Variations.

For stations where the data base exceeded 60 storm periods, each of the analyses described above was carried out on a seasonal basis: Summer(May, June, July, August), Fall(September, October), Winter(November, December, January, February), Spring(March, April) and Equinox(March, April, September, October).

Table I
ANTENNA SITES

STATION NAME	SATELLITE INFORMATION				
	LAT (°N)	LONG (°E)	NAME OF SAT	LAT (°E)	LONG (°E)
NARSSARSUAQ	61.2	-45.4	ATS-3	0	-70° 17.9 207.6
GOOSE BAY	53.3	-60.3	ATS-3	0	-70° 28.7 192.0
HAMILTON	42.6	-70.8	ATS-3	0	-70° 41.0 178.8
ATHENS	38.0	23.7	152F2	0	-34 to 4to46 133.0† 97 (34.2)†
OSAN	37.2	127.10	152F2	0	135 to 5to46 112.3† 200 (18.4)†
ROSMAN, N.C.	35.1	-82.9	ATS-3	0	-70° 42.7 158.2
KENNEDY SFC	28.6	-80.6	ATS-3	0	-70° 54.8 158.5

Solar Positions

420 Km Sub-ionospheric point parameters

STATION NAME	LAT	LONG	Dip(I)	Inv(4)	L	S SOL	N SOL	EQUINOX
								(12 LT)

NARSSARSUAQ	53.1	-52.2	74.9	63.03	4.86	29.7	76.5	54.4
GOOSE BAY	47.5	-62.2	74.1	59.75	3.94	24.1	70.9	48.8
HAMILTON	38.7	-70.7	69.9	52.79	2.94	15.3	62.1	40.0
ATHENS	33-35	13 to 43 + (28)†	48.5	31.03	1.36	10.6	57.4	35.3
OSAN	33-34	128 to 146 + (137)†	45.7	26.76	1.25	10.6	57.4	35.3
ROSMAN, N.C.	32.1	-81.5	64.6	46.51	2.11	8.7	55.5	35.4
KENNEDY SFC	26.3	-79.6	59.3	41.39	1.78	2.9	49.7	27.6

*Nominal value; changes in the ATS-3 satellite position were small (a few degrees) after mid-1971 position varied by 40° before then. ATS-3 began moving again in July 1976.

† Nominal Value

Table II

STATION	PARAMETER	NUMBER OF STORMS	TIME PERIOD	STORM NUMBERS
Goose Bay, Lab.	TEC	67	Nov 71-Apr 75	59-141
Goose Bay, Lab.	Slab Thickness	65	Nov 71-Mar 75	59-139
St. John's, Nfld.	N _{max}	65	Nov 71-Mar 75	59-139
Narssarsuaq, Gmld.	TEC	70	Apr 71-Dec 75	50-129
Kennedy SFC, Fla.	TEC	70	Nov 73-Sep 76	97-175
Athens, Greece	TEC	63	Oct 72-Dec 76	71-180
Osan, Korea	TEC	31	Jan 74-Jun 76	100-172
Rosman, N.C.	TEC	13	Jan 72-Dec 72	61-75
Hamilton, Ma.	TEC	109	Jan 71-Dec 75	46-158

TABLE 1

TABULATED VALUES FOR AVERAGE AND MEDIAN
STORM PATTERNS

NARSSARSSUAQ TEC DATA

NARSSARSSUAQ TEC 71-74

GEO-MAGNETIC STORM ANALYSIS

AVERAGE DAILY VARIATIONS (SD)

**** = NO DATA

ANALYZED THIS RUN = 70

LOCAL TIME	S01	NO STORMS	S02	NO STORMS	S03	NO STORMS	S04	NO STORMS
0	76.60	17.0	36.68	65.0	8.73	60.0	20.98	53.0
1	49.92	14.0	45.56	66.0	12.79	63.0	5.71	57.0
2	53.44	17.0	47.75	68.0	17.71	63.0	6.62	57.0
3	62.18	18.0	64.43	68.0	10.96	61.0	10.91	57.0
4	81.97	19.0	74.63	68.0	15.53	62.0	16.78	56.0
5	54.66	22.0	62.55	69.0	11.11	62.0	10.45	58.0
6	47.45	22.0	37.61	69.0	10.44	63.0	4.15	59.0
7	24.22	22.0	5.09	69.0	5.41	62.0	2.92	59.0
8	8.55	23.0	-7.06	67.0	2.19	62.0	1.38	60.0
9	7.69	28.0	-5.35	68.0	0.93	63.0	0.44	61.0
10	11.29	25.0	-5.75	68.0	0.77	63.0	1.36	62.0
11	14.03	28.0	-5.21	68.0	-0.20	63.0	1.99	61.0
12	18.23	48.0	-5.63	67.0	1.34	63.0	0.73	62.0
13	18.37	47.0	-5.12	68.0	1.50	63.0	2.08	62.0
14	21.94	48.0	-5.55	68.0	1.50	62.0	2.13	62.0
15	18.45	49.0	-10.76	67.0	-0.71	61.0	-1.85	62.0
16	1.40	55.0	-13.49	67.0	-4.00	60.0	-3.39	63.0
17	-1.35	55.0	-15.06	65.0	-8.51	58.0	-1.75	63.0
18	7.81	57.0	-8.85	67.0	-8.30	58.0	-3.91	62.0
19	34.14	57.0	-7.14	65.0	-7.60	59.0	-7.94	62.0
20	48.71	58.0	3.14	65.0	7.32	56.0	-4.50	62.0
21	50.01	57.0	4.95	64.0	9.72	56.0	-3.50	60.0
22	59.04	61.0	5.97	64.0	6.39	57.0	-1.02	61.0
23	61.39	60.0	0.67	64.0	0.89	57.0	1.79	59.0

STANDARD DEVIATIONS OF DAILY VARIATIONS

LOCAL TIME	S1	NO STORMS	S2	NO STORMS	S3	NO STORMS	S4	NO STORMS
0	85.3	13.0	58.9	65.0	49.7	60.0	32.7	53.0
1	86.4	14.0	66.3	66.0	48.4	63.0	36.1	57.0
2	102.1	17.0	57.9	68.0	50.3	63.0	45.3	57.0
3	115.6	18.0	60.7	68.0	44.5	61.0	48.5	57.0
4	104.4	19.0	101.1	68.0	60.2	62.0	60.0	55.0
5	98.9	22.0	51.6	68.0	59.7	62.0	43.6	58.0
6	81.4	22.0	80.9	69.0	51.9	63.0	28.6	59.0
7	40.5	23.0	38.4	68.0	31.2	62.0	24.8	59.0
8	14.8	23.0	19.2	67.0	28.0	62.0	19.4	60.0
9	15.4	23.0	17.0	68.0	26.1	63.0	18.6	61.0
10	21.7	35.0	18.0	68.0	23.5	63.0	18.7	62.0
11	26.8	38.0	17.0	68.0	21.5	63.0	20.2	61.0
12	25.1	45.0	12.0	67.0	23.9	63.0	22.9	62.0
13	26.9	47.0	25.3	66.0	23.6	63.0	22.3	62.0
14	32.1	48.0	22.0	68.0	21.0	62.0	27.4	62.0
15	33.2	49.0	20.0	67.0	17.6	61.0	19.4	62.0
16	25.8	55.0	21.4	67.0	18.7	60.0	21.8	63.0
17	25.9	58.0	38.3	65.0	22.8	58.0	25.4	63.0
18	51.0	57.0	43.5	67.0	26.4	58.0	30.1	62.0
19	71.3	57.0	49.3	65.0	39.0	59.0	33.8	62.0
20	84.5	59.0	68.9	65.0	50.6	59.0	40.7	62.0
21	104.1	57.0	58.3	64.0	46.3	59.0	37.3	60.0
22	92.6	61.0	46.4	64.0	41.9	57.0	34.7	61.0
23	65.2	60.0	45.2	64.0	28.3	57.0	36.8	59.0

[illegible]

SEASON: SUMMER
NASSARSIAC TEC 71-74

[illegible]

NARSARSUAQ TEC 71-74 SEASON: FALL

LOCAL TIME	AVERAGE DAILY VARIATIONS (SD)		APR 74 = NO DATA		TOTAL NUMBER ANALYZED THIS SEASON = 14	
	NO STORMS	SD	NO STORMS	SD	NO STORMS	SD
0000	0000	0000	0000	0000	0000	0000
0100	0000	0000	0000	0000	0000	0000
0200	0000	0000	0000	0000	0000	0000
0300	0000	0000	0000	0000	0000	0000
0400	0000	0000	0000	0000	0000	0000
0500	0000	0000	0000	0000	0000	0000
0600	0000	0000	0000	0000	0000	0000
0700	0000	0000	0000	0000	0000	0000
0800	0000	0000	0000	0000	0000	0000
0900	0000	0000	0000	0000	0000	0000
1000	0000	0000	0000	0000	0000	0000
1100	0000	0000	0000	0000	0000	0000
1200	0000	0000	0000	0000	0000	0000
1300	0000	0000	0000	0000	0000	0000
1400	0000	0000	0000	0000	0000	0000
1500	0000	0000	0000	0000	0000	0000
1600	0000	0000	0000	0000	0000	0000
1700	0000	0000	0000	0000	0000	0000
1800	0000	0000	0000	0000	0000	0000
1900	0000	0000	0000	0000	0000	0000
2000	0000	0000	0000	0000	0000	0000
2100	0000	0000	0000	0000	0000	0000
2200	0000	0000	0000	0000	0000	0000
2300	0000	0000	0000	0000	0000	0000
2400	0000	0000	0000	0000	0000	0000

NARSARSUAQ TEC 71-74 SEASON: FALL

NARSARSUAQ TEC 71-74 SEASON: FALL

LOCAL TIME	STANDARD DEVIATIONS OF DAILY VARIATIONS		APR 74 = NO DATA		TOTAL NUMBER ANALYZED THIS SEASON = 14	
	NO STORMS	SD	NO STORMS	SD	NO STORMS	SD
0000	0000	0000	0000	0000	0000	0000
0100	0000	0000	0000	0000	0000	0000
0200	0000	0000	0000	0000	0000	0000
0300	0000	0000	0000	0000	0000	0000
0400	0000	0000	0000	0000	0000	0000
0500	0000	0000	0000	0000	0000	0000
0600	0000	0000	0000	0000	0000	0000
0700	0000	0000	0000	0000	0000	0000
0800	0000	0000	0000	0000	0000	0000
0900	0000	0000	0000	0000	0000	0000
1000	0000	0000	0000	0000	0000	0000
1100	0000	0000	0000	0000	0000	0000
1200	0000	0000	0000	0000	0000	0000
1300	0000	0000	0000	0000	0000	0000
1400	0000	0000	0000	0000	0000	0000
1500	0000	0000	0000	0000	0000	0000
1600	0000	0000	0000	0000	0000	0000
1700	0000	0000	0000	0000	0000	0000
1800	0000	0000	0000	0000	0000	0000
1900	0000	0000	0000	0000	0000	0000
2000	0000	0000	0000	0000	0000	0000
2100	0000	0000	0000	0000	0000	0000
2200	0000	0000	0000	0000	0000	0000
2300	0000	0000	0000	0000	0000	0000
2400	0000	0000	0000	0000	0000	0000

NARSARSUAQ TEC 71-74 SEASON: FALL

NAVSASUSAC TEC 71-74
 SEASON: FALL
 MEDIAN DAILY VARIATIONS
 ***** = NO DATA
 TOTAL NUMBER ANALYSED THIS SEASON = 14

LOCAL TIME	SD1	NO STORM	NO STORMS	SD3	NO STORMS	SD4	NO STORMS
0000	0000	0000	0000	0000	0000	0000	0000
0100	0000	0000	0000	0000	0000	0000	0000
0200	0000	0000	0000	0000	0000	0000	0000
0300	0000	0000	0000	0000	0000	0000	0000
0400	0000	0000	0000	0000	0000	0000	0000
0500	0000	0000	0000	0000	0000	0000	0000
0600	0000	0000	0000	0000	0000	0000	0000
0700	0000	0000	0000	0000	0000	0000	0000
0800	0000	0000	0000	0000	0000	0000	0000
0900	0000	0000	0000	0000	0000	0000	0000
1000	0000	0000	0000	0000	0000	0000	0000
1100	0000	0000	0000	0000	0000	0000	0000
1200	0000	0000	0000	0000	0000	0000	0000
1300	0000	0000	0000	0000	0000	0000	0000
1400	0000	0000	0000	0000	0000	0000	0000
1500	0000	0000	0000	0000	0000	0000	0000
1600	0000	0000	0000	0000	0000	0000	0000
1700	0000	0000	0000	0000	0000	0000	0000
1800	0000	0000	0000	0000	0000	0000	0000
1900	0000	0000	0000	0000	0000	0000	0000
2000	0000	0000	0000	0000	0000	0000	0000
2100	0000	0000	0000	0000	0000	0000	0000
2200	0000	0000	0000	0000	0000	0000	0000
2300	0000	0000	0000	0000	0000	0000	0000

NAVSASUSAC TEC 71-74
 SEASON: FALL

MEDIAN STORM TIME VARIATIONS

STORM TIME

***** = NO DATA

NO STORMS

SD1

SD2

SD3

SD4

SD5

SD6

SD7

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SD9

SD10

SD11

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ABSTRACTING TFC 71-74
SEASON: EQUINOCTAL

[illegible]

TABLE 2A

TABULATED VALUES FOR AVERAGE AND MEDIAN
STORM PATTERNS

GOOSE BAY TEC DATA

GORSE BAY TEC 1971-1975

SEASON: FALL

LOCAL TIME	AVERAGE DAILY VARIATIONS (SD)	NO STORMS	SD1	SD2	SD3	NO STORMS	SD4	NO STORMS	TOTAL NUMBER ANALYSED THIS SEASON #1
0000	27.75	100	100	100	100	100	100	100	100
0100	20.50	100	100	100	100	100	100	100	100
0200	20.50	100	100	100	100	100	100	100	100
0300	20.50	100	100	100	100	100	100	100	100
0400	20.50	100	100	100	100	100	100	100	100
0500	20.50	100	100	100	100	100	100	100	100
0600	20.50	100	100	100	100	100	100	100	100
0700	20.50	100	100	100	100	100	100	100	100
0800	20.50	100	100	100	100	100	100	100	100
0900	20.50	100	100	100	100	100	100	100	100
1000	20.50	100	100	100	100	100	100	100	100
1100	20.50	100	100	100	100	100	100	100	100
1200	20.50	100	100	100	100	100	100	100	100
1300	20.50	100	100	100	100	100	100	100	100
1400	20.50	100	100	100	100	100	100	100	100
1500	20.50	100	100	100	100	100	100	100	100
1600	20.50	100	100	100	100	100	100	100	100
1700	20.50	100	100	100	100	100	100	100	100
1800	20.50	100	100	100	100	100	100	100	100
1900	20.50	100	100	100	100	100	100	100	100
2000	20.50	100	100	100	100	100	100	100	100
2100	20.50	100	100	100	100	100	100	100	100
2200	20.50	100	100	100	100	100	100	100	100
2300	20.50	100	100	100	100	100	100	100	100

GORSE BAY TEC 1971-1975

SEASON: FALL

LOCAL TIME	STANDARD DEVIATIONS OF DAILY VARIATIONS	NO STORMS	SD1	SD2	SD3	NO STORMS	SD4	NO STORMS
0000	27.75	100	100	100	100	100	100	100
0100	20.50	100	100	100	100	100	100	100
0200	20.50	100	100	100	100	100	100	100
0300	20.50	100	100	100	100	100	100	100
0400	20.50	100	100	100	100	100	100	100
0500	20.50	100	100	100	100	100	100	100
0600	20.50	100	100	100	100	100	100	100
0700	20.50	100	100	100	100	100	100	100
0800	20.50	100	100	100	100	100	100	100
0900	20.50	100	100	100	100	100	100	100
1000	20.50	100	100	100	100	100	100	100
1100	20.50	100	100	100	100	100	100	100
1200	20.50	100	100	100	100	100	100	100
1300	20.50	100	100	100	100	100	100	100
1400	20.50	100	100	100	100	100	100	100
1500	20.50	100	100	100	100	100	100	100
1600	20.50	100	100	100	100	100	100	100
1700	20.50	100	100	100	100	100	100	100
1800	20.50	100	100	100	100	100	100	100
1900	20.50	100	100	100	100	100	100	100
2000	20.50	100	100	100	100	100	100	100
2100	20.50	100	100	100	100	100	100	100
2200	20.50	100	100	100	100	100	100	100
2300	20.50	100	100	100	100	100	100	100

GOOSE BAY TEC 1971-1975 SEASON: WINTER

AVERAGE DAILY VARIATIONS (SD) *** = NO DATA TOTAL NUMBER ANALYZED THIS SEASON = 22

LOCAL TIME	SD	NO STORMS	SD	NO STORMS	SD	NO STORMS	SD	NO STORMS
0100	1.00	1	1.00	1	1.00	1	1.00	1
0200	1.00	1	1.00	1	1.00	1	1.00	1
0300	1.00	1	1.00	1	1.00	1	1.00	1
0400	1.00	1	1.00	1	1.00	1	1.00	1
0500	1.00	1	1.00	1	1.00	1	1.00	1
0600	1.00	1	1.00	1	1.00	1	1.00	1
0700	1.00	1	1.00	1	1.00	1	1.00	1
0800	1.00	1	1.00	1	1.00	1	1.00	1
0900	1.00	1	1.00	1	1.00	1	1.00	1
1000	1.00	1	1.00	1	1.00	1	1.00	1
1100	1.00	1	1.00	1	1.00	1	1.00	1
1200	1.00	1	1.00	1	1.00	1	1.00	1
1300	1.00	1	1.00	1	1.00	1	1.00	1
1400	1.00	1	1.00	1	1.00	1	1.00	1
1500	1.00	1	1.00	1	1.00	1	1.00	1
1600	1.00	1	1.00	1	1.00	1	1.00	1
1700	1.00	1	1.00	1	1.00	1	1.00	1
1800	1.00	1	1.00	1	1.00	1	1.00	1
1900	1.00	1	1.00	1	1.00	1	1.00	1
2000	1.00	1	1.00	1	1.00	1	1.00	1
2100	1.00	1	1.00	1	1.00	1	1.00	1
2200	1.00	1	1.00	1	1.00	1	1.00	1
2300	1.00	1	1.00	1	1.00	1	1.00	1
2400	1.00	1	1.00	1	1.00	1	1.00	1

GOOSE BAY TEC 1971-1975 SEASON: WINTER

STANDARD DEVIATIONS OF DAILY VARIATIONS

LOCAL TIME	SD	NO STORMS	SD	NO STORMS	SD	NO STORMS	SD	NO STORMS
0100	1.00	1	1.00	1	1.00	1	1.00	1
0200	1.00	1	1.00	1	1.00	1	1.00	1
0300	1.00	1	1.00	1	1.00	1	1.00	1
0400	1.00	1	1.00	1	1.00	1	1.00	1
0500	1.00	1	1.00	1	1.00	1	1.00	1
0600	1.00	1	1.00	1	1.00	1	1.00	1
0700	1.00	1	1.00	1	1.00	1	1.00	1
0800	1.00	1	1.00	1	1.00	1	1.00	1
0900	1.00	1	1.00	1	1.00	1	1.00	1
1000	1.00	1	1.00	1	1.00	1	1.00	1
1100	1.00	1	1.00	1	1.00	1	1.00	1
1200	1.00	1	1.00	1	1.00	1	1.00	1
1300	1.00	1	1.00	1	1.00	1	1.00	1
1400	1.00	1	1.00	1	1.00	1	1.00	1
1500	1.00	1	1.00	1	1.00	1	1.00	1
1600	1.00	1	1.00	1	1.00	1	1.00	1
1700	1.00	1	1.00	1	1.00	1	1.00	1
1800	1.00	1	1.00	1	1.00	1	1.00	1
1900	1.00	1	1.00	1	1.00	1	1.00	1
2000	1.00	1	1.00	1	1.00	1	1.00	1
2100	1.00	1	1.00	1	1.00	1	1.00	1
2200	1.00	1	1.00	1	1.00	1	1.00	1
2300	1.00	1	1.00	1	1.00	1	1.00	1
2400	1.00	1	1.00	1	1.00	1	1.00	1

GOOSE BAY TEC 1971-1975 SEASON: SPRING

STANDARD DEVIATIONS OF STORMTIME VARIATIONS

[illegible]

[illegible][illegible]

TABLE 2B

TABULATED VALUES FOR AVERAGE AND MEDIAN
STORM PATTERNS

ST. JOHN'S NMAX DATA

TABLE 2c

TABULATED VALUES FOR AVERAGE AND MEDIAN
STORM PATTERNS

GOOSE BAY/ST. JOHN'S SLAB THICKNESS DATA

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GOOSE BAY SLAB THICKNESS 71-75 GEOMAGNETIC STORM ANALYSIS

MEDIAN STORM TIME VARIATIONS

[illegible]

[illegible]

GOOSE RAY SLAB THICKNESSES 1-175 SLAB 4650 EQUINOCTIAL 1600

STANDARD DEVIATIONS OF DAILY VARIATIONS

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CORSE BAY SLAB THICKNESS 71-75 SEASON: EQUINOCTIAL

MEDIAN DAILY VARIATIONS				TOTAL NUMBER ANALYZED THIS SEASON =22			
				***** = NO DATA			
LOCAL TIME	SD1	NO STORMS	SD2	NO STORMS	SD3	NO STORMS	NO STORMS
0000	-10.52	1000	10.95	1000	9973	1000	1100
0100	-10.32	1000	10.95	1000	9973	1000	1100
0200	-10.32	1000	10.95	1000	9973	1000	1100
0300	-10.32	1000	10.95	1000	9973	1000	1100
0400	-10.32	1000	10.95	1000	9973	1000	1100
0500	-10.32	1000	10.95	1000	9973	1000	1100
0600	-10.32	1000	10.95	1000	9973	1000	1100
0700	-10.32	1000	10.95	1000	9973	1000	1100
0800	-10.32	1000	10.95	1000	9973	1000	1100
0900	-10.32	1000	10.95	1000	9973	1000	1100
1000	-10.32	1000	10.95	1000	9973	1000	1100
1100	-10.32	1000	10.95	1000	9973	1000	1100
1200	-10.32	1000	10.95	1000	9973	1000	1100
1300	-10.32	1000	10.95	1000	9973	1000	1100
1400	-10.32	1000	10.95	1000	9973	1000	1100
1500	-10.32	1000	10.95	1000	9973	1000	1100
1600	-10.32	1000	10.95	1000	9973	1000	1100
1700	-10.32	1000	10.95	1000	9973	1000	1100
1800	-10.32	1000	10.95	1000	9973	1000	1100
1900	-10.32	1000	10.95	1000	9973	1000	1100
2000	-10.32	1000	10.95	1000	9973	1000	1100
2100	-10.32	1000	10.95	1000	9973	1000	1100
2200	-10.32	1000	10.95	1000	9973	1000	1100
2300	-10.32	1000	10.95	1000	9973	1000	1100

CORSE BAY SLAB THICKNESS 71-75 SEASON: EQUINOCTIAL

MEDIAN STORM TIME VARIATIONS				TOTAL NUMBER ANALYZED THIS SEASON =22			
				***** = NO DATA			
STATION TIME	SD1	NO STORMS	SD2	NO STORMS	SD3	NO STORMS	NO STORMS
0000	-10.52	1000	10.95	1000	9973	1000	1100
0100	-10.32	1000	10.95	1000	9973	1000	1100
0200	-10.32	1000	10.95	1000	9973	1000	1100
0300	-10.32	1000	10.95	1000	9973	1000	1100
0400	-10.32	1000	10.95	1000	9973	1000	1100
0500	-10.32	1000	10.95	1000	9973	1000	1100
0600	-10.32	1000	10.95	1000	9973	1000	1100
0700	-10.32	1000	10.95	1000	9973	1000	1100
0800	-10.32	1000	10.95	1000	9973	1000	1100
0900	-10.32	1000	10.95	1000	9973	1000	1100
1000	-10.32	1000	10.95	1000	9973	1000	1100
1100	-10.32	1000	10.95	1000	9973	1000	1100
1200	-10.32	1000	10.95	1000	9973	1000	1100
1300	-10.32	1000	10.95	1000	9973	1000	1100
1400	-10.32	1000	10.95	1000	9973	1000	1100
1500	-10.32	1000	10.95	1000	9973	1000	1100
1600	-10.32	1000	10.95	1000	9973	1000	1100
1700	-10.32	1000	10.95	1000	9973	1000	1100
1800	-10.32	1000	10.95	1000	9973	1000	1100
1900	-10.32	1000	10.95	1000	9973	1000	1100
2000	-10.32	1000	10.95	1000	9973	1000	1100
2100	-10.32	1000	10.95	1000	9973	1000	1100
2200	-10.32	1000	10.95	1000	9973	1000	1100
2300	-10.32	1000	10.95	1000	9973	1000	1100

TABLE 3

TABULATED VALUES FOR AVERAGE AND MEDIAN
STORM PATTERNS

SAGAMORE HILL TEC DATA

SAGAMORE HILL TEC 71-75 GEOMAGNETIC STORM ANALYSIS

AVERAGE DAILY VARIATIONS (SD) *** = NO DATA # ANALYZED THIS RUN = 109

LOCAL TIME	SD1	NO STORMS	SD3	NO STORMS	SD4	NO STORMS
0000	20.00	0000	0000	0000	0000	0000
0100	10.00	0000	0000	0000	0000	0000
0200	10.00	0000	0000	0000	0000	0000
0300	10.00	0000	0000	0000	0000	0000
0400	10.00	0000	0000	0000	0000	0000
0500	10.00	0000	0000	0000	0000	0000
0600	10.00	0000	0000	0000	0000	0000
0700	10.00	0000	0000	0000	0000	0000
0800	10.00	0000	0000	0000	0000	0000
0900	10.00	0000	0000	0000	0000	0000
1000	10.00	0000	0000	0000	0000	0000
1100	10.00	0000	0000	0000	0000	0000
1200	10.00	0000	0000	0000	0000	0000
1300	10.00	0000	0000	0000	0000	0000
1400	10.00	0000	0000	0000	0000	0000
1500	10.00	0000	0000	0000	0000	0000
1600	10.00	0000	0000	0000	0000	0000
1700	10.00	0000	0000	0000	0000	0000
1800	10.00	0000	0000	0000	0000	0000
1900	10.00	0000	0000	0000	0000	0000
2000	10.00	0000	0000	0000	0000	0000
2100	10.00	0000	0000	0000	0000	0000
2200	10.00	0000	0000	0000	0000	0000
2300	10.00	0000	0000	0000	0000	0000

STANDARD DEVIATIONS OF DAILY VARIATIONS

LOCAL TIME	SD1	NO STORMS	SD3	NO STORMS	SD4	NO STORMS
0000	20.00	0000	0000	0000	0000	0000
0100	10.00	0000	0000	0000	0000	0000
0200	10.00	0000	0000	0000	0000	0000
0300	10.00	0000	0000	0000	0000	0000
0400	10.00	0000	0000	0000	0000	0000
0500	10.00	0000	0000	0000	0000	0000
0600	10.00	0000	0000	0000	0000	0000
0700	10.00	0000	0000	0000	0000	0000
0800	10.00	0000	0000	0000	0000	0000
0900	10.00	0000	0000	0000	0000	0000
1000	10.00	0000	0000	0000	0000	0000
1100	10.00	0000	0000	0000	0000	0000
1200	10.00	0000	0000	0000	0000	0000
1300	10.00	0000	0000	0000	0000	0000
1400	10.00	0000	0000	0000	0000	0000
1500	10.00	0000	0000	0000	0000	0000
1600	10.00	0000	0000	0000	0000	0000
1700	10.00	0000	0000	0000	0000	0000
1800	10.00	0000	0000	0000	0000	0000
1900	10.00	0000	0000	0000	0000	0000
2000	10.00	0000	0000	0000	0000	0000
2100	10.00	0000	0000	0000	0000	0000
2200	10.00	0000	0000	0000	0000	0000
2300	10.00	0000	0000	0000	0000	0000

[illegible][illegible]

STANDARD DEVIATIONS OF STORMTIME VARIATIONS

[illegible]

AD-A059 926

BOSTON UNIV MASS DEPT OF ASTRONOMY

F/G 4/1

BEHAVIOR OF THE IONOSPHERIC F-REGION DURING GEOMAGNETIC STORMS.--ETC(U)

MAR 78 M MENDILLO

F19628-75-C-0044

UNCLASSIFIED

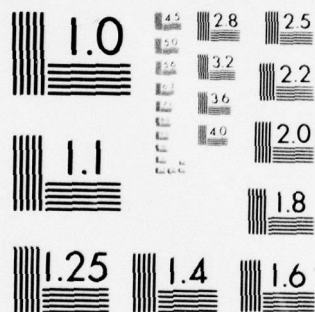
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

TABLE 4

TABULATED VALUES FOR AVERAGE AND MEDIAN
STORM PATTERNS

ROSMAN TEC DATA

H O H C M T S U P E R O H C M T S U P E R O H C M
M

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 84

[illegible][illegible]

TABLE 5

TABULATED VALUES FOR AVERAGE AND MEDIAN
STORM PATTERNS

CAPE KENNEDY TEC DATA

[illegible]

KENNEY SEC 197-176

MEDIAN STOCK TIME VARIATIONS

SEASON: SPRING

NUMBER OF STORES

TIME

STATION

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TABLE 6

TABULATED VALUES FOR AVERAGE AND MEDIAN
STORM PATTERNS

OSAN TEC DATA

CSAN AREA TEC 74-76
 GEOGRAPHIC STORM ANALYSIS
 *** = NO DATA *** ANALYZED THIS RUN = 31

| LOCAL TIME | AVERAGE DAILY VARIATIONS (SD) | STANDARD DEVIATIONS OF DAILY VARIATIONS |
|------------|-------------------------------|---|
| 0000 | NO STORMS | NO STORMS |
| 0100 | NO STORMS | NO STORMS |
| 0200 | NO STORMS | NO STORMS |
| 0300 | NO STORMS | NO STORMS |
| 0400 | NO STORMS | NO STORMS |
| 0500 | NO STORMS | NO STORMS |
| 0600 | NO STORMS | NO STORMS |
| 0700 | NO STORMS | NO STORMS |
| 0800 | NO STORMS | NO STORMS |
| 0900 | NO STORMS | NO STORMS |
| 1000 | NO STORMS | NO STORMS |
| 1100 | NO STORMS | NO STORMS |
| 1200 | NO STORMS | NO STORMS |
| 1300 | NO STORMS | NO STORMS |
| 1400 | NO STORMS | NO STORMS |
| 1500 | NO STORMS | NO STORMS |
| 1600 | NO STORMS | NO STORMS |
| 1700 | NO STORMS | NO STORMS |
| 1800 | NO STORMS | NO STORMS |
| 1900 | NO STORMS | NO STORMS |
| 2000 | NO STORMS | NO STORMS |
| 2100 | NO STORMS | NO STORMS |
| 2200 | NO STORMS | NO STORMS |
| 2300 | NO STORMS | NO STORMS |
| 2400 | NO STORMS | NO STORMS |

LOCAL TIME
 0000 0100 0200 0300 0400 0500 0600 0700 0800 0900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300 2400

LOCAL TIME
 0000 0100 0200 0300 0400 0500 0600 0700 0800 0900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300 2400

TABLE 7

TABULATED VALUES FOR AVERAGE AND MEDIAN
STORM PATTERNS

ATHENS TEC DATA

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[illegible]

SEASON: FALL

NOVIA STORY TIME VARIATIONS

NUMBER OF STORIES

STORY TITLE

STORY NUMBER

ATHENS DEC 1972-76
 SEASON: WINTER
 AVERAGE DAILY VARIATIONS (SD) **** = NO DATA TOTAL NUMBER ANALYZED THIS SEASON = 16

| LOCAL TIME | SD1 | NO STORMS | SD2 | NO STORMS | SD3 | NO STORMS | SD4 | NO STORMS |
|------------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|
| 0000 | 7.000 | 0000 | 7.000 | 0000 | 1.700 | 0000 | 1.700 | 0000 |
| 0100 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 0200 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 0300 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 0400 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 0500 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 0600 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 0700 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 0800 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 0900 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 1000 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 1100 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 1200 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 1300 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 1400 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 1500 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 1600 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 1700 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 1800 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 1900 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 2000 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 2100 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 2200 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 2300 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |

ATHENS DEC 1972-76
 SEASON: WINTER
 STANDARD DEVIATIONS OF DAILY VARIATIONS

| LOCAL TIME | SD1 | NO STORMS | SD2 | NO STORMS | SD3 | NO STORMS | SD4 | NO STORMS |
|------------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|
| 0000 | 7.000 | 0000 | 7.000 | 0000 | 1.700 | 0000 | 1.700 | 0000 |
| 0100 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 0200 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 0300 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 0400 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 0500 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 0600 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 0700 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 0800 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 0900 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 1000 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 1100 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 1200 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 1300 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 1400 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 1500 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 1600 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 1700 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 1800 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 1900 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 2000 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 2100 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 2200 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |
| 2300 | 4.000 | 0000 | 4.000 | 0000 | 1.000 | 0000 | 1.000 | 0000 |

[illegible]

ATHENS TEC 1972-76

SEASON: SPRING

STANDARD DEVIATIONS OF STORMTIME VARIATIONS

STORMTIME VARIATIONS

[illegible][illegible]

ATHENS TEC 1973-76

SEASON: EQUINOCTIAL

MEAN STORM TIME VARIATIONS

NS=NUMBER OF STORMS

STORM TIME

STORM TIME